

## Claims

[c1] An automotive seat assembly with improved side impact rigidity comprising:

    a seat frame comprising:

        a frame track;

        a frame base slidably engaged to said frame track; and

        a frame back rotatably engaged to said frame base; and

    a rear lateral support assembly comprising:

        a support frame attached to a rear portion of said frame base such that said support frame is movable in concert with said frame base, said support frame defining a pocket portion;

        a tubular member positioned within said pocket portion;

        a rocker panel end cap assembly securing a first end of said tubular member within said pocket portion, said rocker panel end cap positioned to engage a rocker panel; and

        a tunnel console end cap assembly securing a second end of said tubular member within said pocket portion, said tunnel console end cap assembly positioned to engage a tunnel console such that said tubular member generates a rigid support between said rocker panel and said tunnel console.

- [c2] An automotive seat assembly as described in claim 1 wherein said support frame is rotatably attached to said frame base, said frame base vertically adjustable, said support frame and said tubular member rotating relative to said rocker panel end cap assembly and said tunnel console end cap assembly during vertical movement of said frame base.
- [c3] An automotive seat assembly as described in claim 1, wherein:
  - said support frame comprises a forward extended pocket portion; and
  - said tubular member comprises a forward extended tubular portion contingent with said forward extended pocket portion.
- [c4] An automotive seat assembly as described in claim 1, wherein said rocker panel end cap assembly comprises:
  - a rocker end cap element; and
  - a c-section triangular brace securing said tubular member to said c-section frame.
- [c5] An automotive seat assembly as described in claim 1, further comprising:
  - a upper-section cross brace welded laterally between a frame back rocker-side and a frame back tunnel-side.

- [c6] An automotive seat assembly as described in claim 1, further comprising:
  - a mid-section brace positioned on a lower portion of a frame back rocker-side.
- [c7] An automotive seat assembly as described in claim 6, wherein said mid-section brace comprises:
  - a horizontal c-section brace portion mounted on a lower portion of said frame back, said horizontal c-section mounted between said frame back rocker-side and said frame back tunnel-side to generate a horizontal lower brace; and
  - a vertical brace portion mounted on said frame back rocker-side, said vertical brace portion including a triangular brace portion mounted to said horizontal c-section brace portion.
- [c8] An automotive seat assembly as described in claim 1, wherein;
  - said rocker panel end cap assembly comprises an elongated rocker end cap element; and
  - said tunnel console end cap assembly comprises an elongated tunnel end cap element.
- [c9] An automotive seat assembly as described in claim 7, wherein said vertical brace portion comprises a vertical

c-section brace portion.

- [c10] An automotive seat assembly as described in claim 1, wherein said support frame is bolted to said frame base.
- [c11] An automotive seat assembly with improved side impact rigidity comprising:
  - a seat frame comprising:
    - a frame track;
    - a frame base slidably engaged to said frame track, said frame base angularly and vertically adjustable relative to said frame track; and
    - a frame back rotatably engaged to said frame base; and
  - a rear lateral support assembly comprising:
    - a support frame attached to a rear portion of said frame base such that said support frame is movable in concert with said frame base, said support frame defining a pocket portion, said support frame rotatably attached to said frame base;
    - a tubular member positioned within said pocket portion;
    - a rocker panel end cap assembly securing a first end of said tubular member within said pocket portion, said rocker panel end cap positioned to engage a rocker panel; and
    - a tunnel console end cap assembly securing a second end of said tubular member within said pocket portion, said tunnel console end cap assembly positioned to en-

gage a tunnel console such that said tubular member generates a rigid support between said rocker panel and said tunnel console;  
wherein said support frame and said tubular member rotate relative to said rocker panel end cap assembly and said tunnel console end cap assembly during movement of said frame base.

- [c12] An automotive seat assembly as described in claim 11, wherein:
  - said support frame comprises a forward extended pocket portion; and
  - said tubular member comprises a forward extended tubular portion contingent with said forward extended pocket portion.
- [c13] An automotive seat assembly as described in claim 11, wherein said rocker panel end cap assembly comprises:
  - a rocker end cap element; and
  - a c-section triangular brace securing said tubular member to said c-section frame.
- [c14] An automotive seat assembly as described in claim 11, wherein said headrest outer structure is completely located between said seatback top face and said seatbase element when said seatback element is in said seatback folded position.

- [c15] An automotive seat assembly as described in claim 11, further comprising:
  - a upper-section cross brace welded laterally between a frame back rocker-side and a frame back tunnel-side.
- [c16] An automotive seat assembly as described in claim 11, further comprising:
  - a mid-section brace positioned on a lower portion of a frame back rocker-side.
- [c17] An automotive seat assembly as described in claim 16, wherein said mid-section brace comprises:
  - a horizontal c-section brace portion mounted on a lower portion of said frame back, said horizontal c-section mounted between said frame back rocker-side and said frame back tunnel-side to generate a horizontal lower brace; and
  - a vertical brace portion mounted on said frame back rocker-side, said vertical brace portion including a triangular brace portion mounted to said horizontal c-section brace portion.
- [c18] An automotive seat assembly as described in claim 17, wherein said vertical brace portion comprises a vertical c-section brace portion.
- [c19] A method of preventing side-impact protrusion on an

automotive seat assembly comprising:  
bolting a rear lateral support assembly onto a rear portion of a frame base of a seat frame, said rear lateral support assembly comprising:  
a support frame attached to said rear portion of said frame base such that said support frame is movable in concert with said frame base, said support frame defining a pocket portion, said support frame rotatably attached to said frame base;  
a tubular member positioned within said pocket portion;  
a rocker panel end cap assembly securing a first end of said tubular member within said pocket portion; and  
a tunnel console end cap assembly securing a second end of said tubular member within said pocket portion, said tunnel console end cap assembly positioned to engage a tunnel console such that said tubular member generates a rigid support between said rocker panel and said tunnel console;  
positioning said rocker panel end cap to engage a rocker panel during side impact;  
positioning said tunnel console end cap to engage tunnel console during side impact.

[c20] A method as described in claim 19, further comprising:  
rotating said support frame and said tubular member relative to said rocker panel end cap assembly and said

tunnel console end cap assembly during positional adjustment of said frame base.